1. Which of the following intervals describes the Domain of the function below?

$$f(x) = -\log_2(x+5) - 3$$

  A. $(a, \infty), a \in [-7.4, -3.6]$

  B. $[a, \infty), a \in [-3.7, -0.2]$

  C. $(-\infty, a), a \in [3.7, 6]$

  D. $(-\infty, a], a \in [-0.5, 3.9]$

  E. $(-\infty, \infty)$

2. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x-1} - 8$$

  A. $[a, \infty), a \in [-8, -2]$

  B. $(a, \infty), a \in [-8, -2]$

  C. $(-\infty, a), a \in [3, 11]$

  D. $(-\infty, a], a \in [3, 11]$

  E. $(-\infty, \infty)$

3. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x+1) - 4$$

  A. $(-\infty, a), a \in [1.5, 5.6]$

  B. $(-\infty, a), a \in [-4.9, -3.4]$

  C. $[a, \infty), a \in [0.5, 1.7]$

  D. $[a, \infty), a \in [-3, 0.9]$

  E. $(-\infty, \infty)$

4. Solve the equation for x and choose the interval that contains x (if it exists).

$$10 = \sqrt[5]{\dfrac{14}{e^{6x}}}$$

  A. $x \in [-0.9, 0.6]$

  B. $x \in [0.6, 2.6]$

  C. $x \in [-9.1, -8.5]$

  D. There is no Real solution to the equation.

  E. None of the above.

5. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$5^{2x+5} = 9^{4x-3}$$

  A. $x \in [2.23, 2.85]$

  B. $x \in [0.83, 2.19]$

  C. $x \in [7.01, 8]$

  D. $x \in [3.84, 5.34]$

  E. There is no Real solution to the equation.

6. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$3^{2x+5} = \left(\dfrac{1}{343}\right)^{4x-5}$$

  A. $x \in [4.5, 6]$

  B. $x \in [0.7, 1]$

  C. $x \in [-2.1, 0.4]$

  D. $x \in [-11.9, -11.1]$

  E. There is no Real solution to the equation.

7. Which of the following intervals describes the Domain of the function below?
$$f(x) = e^{x+8} - 1$$

A. $(a, \infty), a \in [-0.9, 1.6]$

B. $(-\infty, a], a \in [-2.2, -0.4]$

C. $(-\infty, a), a \in [-2.2, -0.4]$

D. $[a, \infty), a \in [-0.9, 1.6]$

E. $(-\infty, \infty)$

8. Solve the equation for x and choose the interval that contains the solution (if it exists).
$$\log_4 (3x + 8) + 4 = 3$$

A. $x \in [18.33, 19.06]$

B. $x \in [2.79, 3.04]$

C. $x \in [-2.41, -1.84]$

D. $x \in [-3.03, -2.53]$

E. There is no Real solution to the equation.

9. Solve the equation for x and choose the interval that contains the solution (if it exists).
$$\log_4 (4x + 6) + 5 = 3$$

A. $x \in [8.5, 19.5]$

B. $x \in [-4.48, 0.52]$

C. $x \in [1.5, 4.5]$

D. $x \in [5.5, 6.5]$

E. There is no Real solution to the equation.

10. Solve the equation for x and choose the interval that contains x (if it exists).

$$16 = \sqrt[7]{\frac{20}{e^{3x}}}$$

   A. $x \in [3.47, 6.47]$

   B. $x \in [-1.85, 2.15]$

   C. $x \in [-39.33, -36.33]$

   D. There is no Real solution to the equation.

   E. None of the above.

11. Which of the following intervals describes the Domain of the function below?

$$f(x) = -\log_2{(x+3)} + 6$$

   A. $[a, \infty), a \in [4.8, 8.1]$

   B. $(-\infty, a), a \in [1.5, 5.8]$

   C. $(-\infty, a], a \in [-7.7, -3.1]$

   D. $(a, \infty), a \in [-3.1, -2.7]$

   E. $(-\infty, \infty)$

12. Which of the following intervals describes the Domain of the function below?

$$f(x) = e^{x+2} + 7$$

   A. $[a, \infty), a \in [-13, -2]$

   B. $(-\infty, a), a \in [7, 8]$

   C. $(a, \infty), a \in [-13, -2]$

   D. $(-\infty, a], a \in [7, 8]$

   E. $(-\infty, \infty)$

13. Which of the following intervals describes the Range of the function below?

$$f(x) = \log_2 (x + 3) - 6$$

- A. $(-\infty, a), a \in [4.4, 8.6]$
- B. $[a, \infty), a \in [0.6, 3.9]$
- C. $[a, \infty), a \in [-3.9, 0.8]$
- D. $(-\infty, a), a \in [-8.8, -5.8]$
- E. $(-\infty, \infty)$

14. Solve the equation for x and choose the interval that contains x (if it exists).

$$24 = \sqrt[3]{\frac{18}{e^{4x}}}$$

- A. $x \in [0.8, 2.9]$
- B. $x \in [-1.1, 0.5]$
- C. $x \in [-19.8, -17.9]$
- D. There is no Real solution to the equation.
- E. None of the above.

15. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$5^{5x-3} = 64^{2x+4}$$

- A. $x \in [2.33, 3.33]$
- B. $x \in [-79.33, -76.33]$
- C. $x \in [5.15, 8.15]$
- D. $x \in [-26.87, -24.87]$
- E. There is no Real solution to the equation.

16. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$2^{3x-3} = \left(\frac{1}{125}\right)^{4x+4}$$

A. $x \in [-8.8, -6.3]$

B. $x \in [-0.7, 2.1]$

C. $x \in [16.5, 18.1]$

D. $x \in [-1.3, -0.3]$

E. There is no Real solution to the equation.

17. Which of the following intervals describes the Domain of the function below?

$$f(x) = -e^{x-7} - 5$$

A. $(-\infty, a), a \in [-9, -4]$

B. $[a, \infty), a \in [4, 9]$

C. $(-\infty, a], a \in [-9, -4]$

D. $(a, \infty), a \in [4, 9]$

E. $(-\infty, \infty)$

18. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5 (2x + 6) + 5 = 2$$

A. $x \in [-119.5, -117.5]$

B. $x \in [-125.5, -120.5]$

C. $x \in [7.5, 17.5]$

D. $x \in [-3, -1]$

E. There is no Real solution to the equation.

19. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_4 (4x + 6) + 5 = 2$$

A. $x \in [-1.8, 0.4]$

B. $x \in [16.2, 21.4]$

C. $x \in [1.6, 2.6]$

D. $x \in [21, 23.7]$

E. There is no Real solution to the equation.

20. Solve the equation for x and choose the interval that contains x (if it exists).

$$15 = \ln \sqrt[3]{\frac{14}{e^{6x}}}$$

A. $x \in [-6.56, -2.56]$

B. $x \in [-3.79, -0.79]$

C. $x \in [-8.06, -6.06]$

D. There is no Real solution to the equation.

E. None of the above.

21. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2 (x + 7) + 4$$

A. $(-\infty, a), a \in [-1, 6]$

B. $[a, \infty), a \in [-13, -6]$

C. $(-\infty, a), a \in [-4, -1]$

D. $[a, \infty), a \in [7, 14]$

E. $(-\infty, \infty)$

22. Which of the following intervals describes the Range of the function below?
$$f(x) = e^{x+8} - 7$$

    A. $(-\infty, a), a \in [3, 11]$

    B. $(-\infty, a], a \in [3, 11]$

    C. $[a, \infty), a \in [-10, -4]$

    D. $(a, \infty), a \in [-10, -4]$

    E. $(-\infty, \infty)$

23. Which of the following intervals describes the Range of the function below?
$$f(x) = \log_2 (x + 3) - 5$$

    A. $(-\infty, a), a \in [4.72, 6.11]$

    B. $[a, \infty), a \in [2.54, 3.4]$

    C. $[a, \infty), a \in [-3.77, -2.67]$

    D. $(-\infty, a), a \in [-6.51, -3.51]$

    E. $(-\infty, \infty)$

24. Solve the equation for x and choose the interval that contains x (if it exists).
$$8 = \ln \sqrt[5]{\frac{7}{e^{5x}}}$$

    A. $x \in [-2.7, -0.2]$

    B. $x \in [-3.5, -2.7]$

    C. $x \in [6.3, 9.3]$

    D. There is no Real solution to the equation.

    E. None of the above.

25. Solve the equation for x and choose the interval that contains the solution (if it exists).
$$5^{3x-4} = \left(\frac{1}{27}\right)^{-2x-2}$$

    A. $x \in [0.3, 1.1]$

    B. $x \in [0.5, 3.3]$

    C. $x \in [-1.7, -1]$

    D. $x \in [-8.1, -6.3]$

    E. There is no Real solution to the equation.

26. Solve the equation for x and choose the interval that contains the solution (if it exists).
$$2^{2x-3} = 125^{4x+5}$$

    A. $x \in [-0.5, 1]$

    B. $x \in [-14.3, -12.9]$

    C. $x \in [-2.9, -0.9]$

    D. $x \in [-4.4, -2.8]$

    E. There is no Real solution to the equation.

27. Which of the following intervals describes the Domain of the function below?
$$f(x) = e^{x-3} + 3$$

    A. $(a, \infty), a \in [-3, 2]$

    B. $(-\infty, a], a \in [-1, 6]$

    C. $(-\infty, a), a \in [-1, 6]$

    D. $[a, \infty), a \in [-3, 2]$

    E. $(-\infty, \infty)$

28. Solve the equation for x and choose the interval that contains the solution (if it exists).
$$\log_3(-3x+6)+5=2$$

    A. $x \in [7.2, 11.8]$

    B. $x \in [-2.4, -0.8]$

    C. $x \in [4.8, 8.2]$

    D. $x \in [1.3, 2.6]$

    E. There is no Real solution to the equation.

29. Solve the equation for x and choose the interval that contains the solution (if it exists).
$$\log_5(-4x+7)+4=3$$

    A. $x \in [1.92, 2.48]$

    B. $x \in [1.63, 1.76]$

    C. $x \in [-29.71, -29.48]$

    D. $x \in [-1.56, -1.46]$

    E. There is no Real solution to the equation.

30. Solve the equation for x and choose the interval that contains x (if it exists).
$$17 = \sqrt[6]{\frac{17}{e^{4x}}}$$

    A. $x \in [3.54, 5.54]$

    B. $x \in [-26.21, -23.21]$

    C. $x \in [-0.71, 1.29]$

    D. There is no Real solution to the equation.

    E. None of the above.